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1	888	((graphics adj (accelerator or processor or controller or adaptor or engine or pipeline) or renderer or (render\$3 adj (engine or pipeline))) same cache\$1	USPAT	2004/09/11 12:02
2	141	((graphics adj (accelerator or processor or controller or adaptor or engine or pipeline) or renderer or (render\$3 adj (engine or pipeline))) same cache\$1) same texture\$1	USPAT	2004/09/11 12:03
3	604	((main or host or system) adj memory) same texture\$1	USPAT	2004/09/11 12:03
4	52	((graphics adj (accelerator or processor or controller or adaptor or engine or pipeline) or renderer or (render\$3 adj (engine or pipeline))) same cache\$1) same texture\$1) same ((frame adj buffer) or (local adj (buffer or memory)))	USPAT	2004/09/11 12:50
5	42	((main or host or system) adj memory) same texture\$1) and (((graphics adj (accelerator or processor or controller or adaptor or engine or pipeline) or renderer or (render\$3 adj (engine or pipeline))) same cache\$1) same texture\$1) same ((frame adj buffer) or (local adj (buffer or memory)))))	USPAT	2004/09/11 12:48
6	14	("5623628" "5659715" "5678009" "5801720" "5854637" "5860081" "5875464" "5905509" "6014728" "6044478" "6052133" "6101589" "6105111" "6130680").PN.	USPAT	2004/09/11 12:07
7	5	("5249282" "5949439" "6023745" "6026478" "6032225").PN.	USPAT	2004/09/11 12:40
8	12	((graphics adj (accelerator or processor or controller or adaptor or engine or pipeline) or renderer or (render\$3 adj (engine or pipeline))) same cache\$1) same texture\$1) same ((frame adj buffer) or (local adj (buffer or memory)))) and (tlb or (page\$1 near5 table\$1))	USPAT	2004/09/11 12:50
9	70	((graphics adj (accelerator or processor or controller or adaptor or engine or pipeline) or renderer or (render\$3 adj (engine or pipeline))) same cache\$1) same texture\$1) same ((texture near3 memory) or (frame adj buffer) or (local adj (buffer or memory)))	USPAT	2004/09/11 12:50
10	13	((graphics adj (accelerator or processor or controller or adaptor or engine or pipeline) or renderer or (render\$3 adj (engine or pipeline))) same cache\$1) same texture\$1) same ((texture near3 memory) or (frame adj buffer) or (local adj (buffer or memory)))) and (tlb or (page\$1 near5 table\$1))	USPAT	2004/09/11 12:51



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1 [Real-time programmable shading](#)

Anselmo Lastra, Steven Molnar, Marc Olano, Yulan Wang

April 1995 **Proceedings of the 1995 symposium on Interactive 3D graphics**

Full text available: [pdf\(3.67 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

One of the main techniques used by software renderers to produce stunningly realistic images is programmable shading—executing an arbitrarily complex program to compute the color at each pixel. Thus far, programmable shading has only been available on software rendering systems that run on general-purpose computers. Rendering each image can take from minutes to hours. Parallel rendering engines, on the other hand, have steadily increased in generality and in performance. We ...

2 [Direct volume rendering with shading via three-dimensional textures](#)

Allen Van Gelder, Kwansik Kim

October 1996 **Proceedings of the 1996 symposium on Volume visualization**

Full text available: [pdf\(3.97 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

3 [Real-time procedural textures](#)

John Rhoades, Greg Turk, Andrew Bell, Andrei State, Ulrich Neumann, Amitabh Varshney

June 1992 **Proceedings of the 1992 symposium on Interactive 3D graphics**

Full text available: [pdf\(822.02 KB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

4 [Summed-area tables for texture mapping](#)

Franklin C. Crow

January 1984 **ACM SIGGRAPH Computer Graphics, Proceedings of the 11th annual conference on Computer graphics and interactive techniques**, Volume 18
Issue 3

Full text available: [pdf\(940.61 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Texture-map computations can be made tractable through use of precalculated tables which allow computational costs independent of the texture density. The first example of this

technique, the "mip" map, uses a set of tables containing successively lower-resolution representations filtered down from the discrete texture function. An alternative method using a single table of values representing the integral over the texture function rather than the function itself may yield super ...

Keywords: Antialiasing, Shading algorithms, Table lookup algorithms, texture mapping

5 The design and analysis of a cache architecture for texture mapping

Ziyad S. Hakura, Anoop Gupta

May 1997 **ACM SIGARCH Computer Architecture News , Proceedings of the 24th annual international symposium on Computer architecture**, Volume 25 Issue 2

Full text available:  pdf(2.10 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The effectiveness of texture mapping in enhancing the realism of computer generated imagery has made support for real-time texture mapping a critical part of graphics pipelines. Despite a recent surge in interest in three-dimensional graphics from computer architects, high-quality high-speed texture mapping has so far been confined to costly hardware systems that use brute-force techniques to achieve high performance. One obstacle faced by designers of texture mapping systems is the requirement ...

6 Deformable volume rendering by 3D texture mapping and octree encoding

Shiaofen Fang, Su Huang, Rajagopalan Srinivasan, Raghu Raghavan

October 1996 **Proceedings of the 7th conference on Visualization '96**

Full text available:  pdf(1.06 MB)  Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)
[Publisher Site](#)

Keywords: 3D Texture Mapping, morphing, octree, scientific visualization, volume deformation, volume rendering

7 Talisman: commodity realtime 3D graphics for the PC

Jay Torborg, James T. Kajiya

August 1996 **Proceedings of the 23rd annual conference on Computer graphics and interactive techniques**

Full text available:  pdf(107.48 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

8 Time critical lumigraph rendering

Peter-Pike Sloan, Michael F. Cohen, Steven J. Gortler

April 1997 **Proceedings of the 1997 symposium on Interactive 3D graphics**

Full text available:  pdf(952.89 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

9 Hierarchical view-dependent structures for interactive scene manipulation

Normand Brière, Pierre Poulin

August 1996 **Proceedings of the 23rd annual conference on Computer graphics and interactive techniques**

Full text available:  pdf(141.91 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: color tree, image quadtree, interactive system, ray tree, rendering, scene editing

10 Pixel-planes 5: a heterogeneous multiprocessor graphics system using processor-enhanced memories

Henry Fuchs, John Poulton, John Eyles, Trey Greer, Jack Goldfeather, David Ellsworth, Steve Molnar, Greg Turk, Brice Tebbs, Laura Israel

July 1989 **ACM SIGGRAPH Computer Graphics , Proceedings of the 16th annual conference on Computer graphics and interactive techniques**, Volume 23 Issue 3

Full text available:  pdf(2.01 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper introduces the architecture and initial algorithms for Pixel-Planes 5, a heterogeneous multi-computer designed both for high-speed polygon and sphere rendering (1M Phong-shaded triangles/second) and for supporting algorithm and application research in interactive 3D graphics. Techniques are described for volume rendering at multiple frames per second, font generation directly from conic spline descriptions, and rapid calculation of radiosity form-factors. The hardware consists of up to ...

11 PixelFlow: high-speed rendering using image composition

Steven Molnar, John Eyles, John Poulton

July 1992 **ACM SIGGRAPH Computer Graphics , Proceedings of the 19th annual conference on Computer graphics and interactive techniques**, Volume 26 Issue 2

Full text available:  pdf(2.31 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: antialiasing, compositing, deferred shading, rendering, scalable

12 Rendering from compressed textures

Andrew C. Beers, Maneesh Agrawala, Navin Chaddha

August 1996 **Proceedings of the 23rd annual conference on Computer graphics and interactive techniques**

Full text available:  pdf(73.98 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

13 The versatility of color mapping

Samuel P. Uselton, Mark E. Lee, Randy A. Brown

October 1986 **Proceedings of the 1986 workshop on Applied computing**

Full text available:  pdf(412.49 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Extracting information from large amounts of data by using tables of numbers is difficult. Often, such data can be presented more effectively with graphics. The reduction in the cost of memory has allowed more powerful display systems to provide for the simultaneous display of hundreds, thousands, and even millions of colors. Effective and efficient manipulation of the colors in the display system is necessary to manage the use of such a large number of colors. These extended color capabilities ...

14 Reality Engine graphics

Kurt Akeley

September 1993 **Proceedings of the 20th annual conference on Computer graphics and interactive techniques**

Full text available:  pdf(192.63 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

15 The pixel machine: a parallel image computer

Michael Poimesil, Eric M. Hoffert

July 1989 **ACM SIGGRAPH Computer Graphics , Proceedings of the 16th annual conference on Computer graphics and interactive techniques**, Volume 23 Issue 3

Full text available:  pdf(3.12 MB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

We describe the system architecture and the programming environment of the Pixel Machine - a parallel image computer with a distributed frame buffer. The architecture of the computer is based on an array of asynchronous MIMD nodes with parallel access to a large frame buffer. The machine consists of a pipeline of *pipe nodes* which execute sequential algorithms and an array of $m \times n$ pixel nodes which execute parallel algorithms. A *pixel node* directly accesses e ...

16 Fast perspective volume rendering with splatting by utilizing a ray-driven approach

Klaus Mueller, Roni Yagel

October 1996 **Proceedings of the 7th conference on Visualization '96**

Full text available:  pdf(1.33 MB)  Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)
[Publisher Site](#)

17 A hardware stochastic interpolator for raster displays

Timothy S. Piper, Alain Fournier

January 1984 **ACM SIGGRAPH Computer Graphics , Proceedings of the 11th annual conference on Computer graphics and interactive techniques**, Volume 18 Issue 3

Full text available:  pdf(921.49 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Stochastic modeling has found uses so far mainly for expensive very realistic graphics display. The cost of rendering is not intrinsic to the technique, but mainly due to the high resolution and the sophisticated display techniques which accompany it. We describe here a basic tool for a less expensive approach to stochastic modeling which is designed for a more "down to earth" type of application, and brings the display of stochastic models nearer to real-time. A spec ...

Keywords: Stochastic modeling

18 The sort-first rendering architecture for high-performance graphics

Carl Mueller

April 1995 **Proceedings of the 1995 symposium on Interactive 3D graphics**

Full text available:  pdf(4.07 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


Interactive graphics applications have long been challenging graphics system designers by demanding machines that can provide ever increasing polygon rendering performance. Another trend in interactive graphics is the growing use of display devices with pixel counts well beyond what is usually considered "high-resolution." If we examine the architectural space of high-performance rendering systems, we discover only one architectural class that promises to deliver high polygon pe ...

Decorating implicit surfaces

Hans K hling Pedersen

September 1995 **Proceedings of the 22nd annual conference on Computer graphics and interactive techniques**

Full text available:  pdf(421.73 KB)

 ps(1.39 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

20 Undebuggability and cognitive science

Christopher Cherniak

April 1988 **Communications of the ACM**, Volume 31 Issue 4

Full text available:  pdf(1.42 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#),
[review](#)

A resource-realistic perspective suggests some indispensable features for a computer program that approximates all human mentality. The mind's program would differ fundamentally more from familiar types of software. These features seem to exclude reasonably establishing that a program correctly and completely models the mind.

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1 A display system for the Stellar graphics supercomputer model GS1000

Brian Apgar, Bret Bersack, Abraham Mammen

June 1988 **ACM SIGGRAPH Computer Graphics , Proceedings of the 15th annual
conference on Computer graphics and interactive techniques**, Volume 22 Issue 4

Full text available: pdf(826.23 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a high performance display system that has been incorporated into the overall architecture of the Stellar Graphics Supercomputer Model GS1000. The display system is tightly coupled to the CPU, memory system and vector processing unit of this supercomputer, and is capable of rendering 150,000 shaded triangles/sec, and 600,000 short vectors/sec. The goal of the architecture is to share hardware resources between the CPU and display system and achieve a high bandwidth connectio ...

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